Remarks/Arguments

Claim Summary

By this Amendment, claims 1, 2, 17 and 19 have been revised, and new claim 22 has been added.

Claims 1-2 and 4-22 are now pending in the application.

35 U.S.C. ¶112, first paragraph

Without acquiescing[2] to the Examiner's reasoning, the rejection under 35 U.S.C. ¶112, first paragraph, has been rendered moot by deletion of the word "directly" in claims 1, 17 and 19.

35 U.S.C. ¶112, second paragraph

The Examiner's attention is directed to the last paragraph of page 10 of the present specification. As described therein, it is not necessary that all of the faceplate holes 9 are aligned with the sheet holes 18. In this manner, "blind holes" may be created in the process side.

By this Amendment, the words "at least" have been deleted from claim 5, thus clarifying that only some of the faceplate holes (orifices) not aligned with sheet holes.

35 U.S.C. ¶103 – Dornfest et al., Nguyen, and Arami et al.

Claims 1, 2, 4, 6, 7, 9, 13 and 15-20 were rejected under 35 U.S.C. ¶103 as being unpatentable over Dornfest et el. (US 5680013) in view of Nguyen (US 6565661). Claims 10-12 were rejected under 35 U.S.C. ¶103 as being unpatentable over Dornfest et el. in view of Nguyen, and further in view of Arami et al. (US 5938850). Applicants traverse these rejections with respect to the now-pending claims.

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[2] Applicants note that the first paragraph of page 4 of the present specification makes clear that the sealing member is optional.

The Examiner points to the embodiments of Figures 14 to 16 of the Dornfest et al., and admits that Dornfest et al. does not teach that the sheet orifices are smaller in size than the minimum diameter of the faceplate orifices. However, the Examiner then points to Nguyen which shows showerheads that include orifices having diameters of varying widths. The Examiner apparently argues that it would be obvious for the skilled person to consider using the principle described in Nguyen in the apparatus of Dornfest.

However, there no teaching in either of these documents of using a sheet with smaller orifices to control the passage of gas through wider orifices in a faceplate. In the embodiment of Figure 14 of Dornfest, item 115 is a front plate for the showerhead which appears to be conventional in nature and can not reasonably be interpreted as a "sheet". Item 120 is a ceramic disc that is intended to prevent/inhibit attack of heated metal surfaces by chemically aggressive species generated in the plasma during processes of material (as discussed in the "Summary of the Invention" section at column 2). **The diameters of orifices 117 of the front plate 115 and orifices 122 of the ceramic disc 120 are identical and there is suggestion that this could be varied.** Indeed, as the disc 120 is intended to be a protective "cover" only, there would be no hint for the skilled person to consider making its orifices different in diameter/location to those of the front plate 115.

In the embodiments of Figures 15 and 16 of Dornfest, the showerhead front plate 115 is still present and a cup-shaped ceramic element 150 is used to cover it. **Again, the orifices 154 of the ceramic element 150 are identical in diameter and position to the orifices 117 of the front plate 115.**

In the meantime, Nguyen describes various types of faceplates (or in some cases (e.g. Figure 14) gas inlet plates) that include orifices having wider and narrower portions. **If the skilled person were to consider combining the teaching of Nguyen with Dornfest then the result would be to form the front plate 115 of Dornfest's showerhead with orifices of varying diameter and not to insert a sheet with smaller diameters next to the faceplate**

(regardless of whether the faceplate is considered to be item 115, 120 or 150). The purpose of items 120 and 150 is to act protective coverings and there is no suggestion that this could be used for any other purpose. There is no suggestion in either document, either alone or in combination, that a separate sheet specifically designed to have orifices of smaller diameter than a faceplate should be used to control gas flow into the processing space (which leads to the manufacturing advantages discussed in the penultimate paragraph on page 10 of the present application).

For **at least** the reasons stated above, Applicants submit it to be manifest that claims 1, 2, 4, 6, 7, 9-13 and 15-20 are **not** obvious in view of the teachings of Dornfest et al. and Nguyen, taken with or without the teachings of Arami et al.

35 U.S.C. ¶103 – Dopplehammer et al., Nguyen, and Arami et al.

Claims 1, 2, 4-9 and 12-21 were rejected under 35 U.S.C. ¶103 as being unpatentable over Dopplehammer et el. (US 6533867) in view of Nguyen (US 6565661). Claims 10-11 were rejected under 35 U.S.C. ¶103 as being unpatentable over Dopplehammer et el. in view of Nguyen, and further in view of Arami et al. (US 5938850). Applicants traverse these rejections with respect to the now-pending claims.

The Examiner uses a similar line of argument as presented in the previous rejection by stating that Dopplehammer discloses a showerhead apparatus with two elements 45, 46 that have orifices. In Dopplehammer, the orifices in items 45 and 46 have the **same diameter** (see Figures 5 to 17). The Examiner then argues that the skilled person would use the principle described in Nguyen to change the diameters of the orifices so that they are narrower than those of the faceplate orifices.

Again, however, Nguyen only teaches a faceplate having orifices of narrower and thicker portions diameter. **There is no suggestion of using a separate sheet having a narrower diameter next to wider faceplate orifices.**

If the skilled person were to consider combining the teaching of Nguyen with Dopplehammer et al, then the result would be to form the front plate Dopplehammer's showerhead with orifices of varying diameter and not to insert a sheet with smaller diameters next to the faceplate. There is no suggestion in either document, either alone or in combination, that a separate sheet specifically designed to have orifices of smaller diameter than a faceplate should be used to control gas flow into the processing space.

For **at least** the reasons stated above, Applicants submit it to be manifest that claims 1, 2, 4-21 are **not** obvious in view of the teachings of Dopplehammer et al. and Nguyen, taken with or without the teachings of Arami et al.

Conclusion

No other issues remaining, reconsideration and favourable action upon the claims 1-2 and 4-22 now pending in the application are requested.

Respectfully submitted,

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